

REMARKS

Reconsideration of this application is respectfully requested.

I Status of the Claims

Claims 13-18 and 20 are pending in the application.

Claims 13-15 and 18 have been rejected by the Examiner. Claims 16 and 17 have been objected to by the Examiner.

Claim 20 has been withdrawn from consideration.

Claim 13 has been amended with no new matter added.

II Rejection Under 35 U.S.C. § 103(a)

The Examiner rejected claims 13-15 and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,635,037 to Chu ("Chu") in view of U.S. Patent No. 5,798,135 to Ueda et al. ("Ueda"). The Examiner states that Chu teaches a method for forming a thin-film magnetic recording medium comprising the steps of the present invention, whereby surface defects are minimized and surface quality is greatly improved. However, the Examiner admits that although Chu teaches that by proper choice of the types of gases and the proportions thereof etching rate may be controlled, Chu does not teach the use of a process gas mixture comprising solely of an inert gas, an oxygen gas, and a nitrogen gas.

The Examiner relies on Ueda for teaching a method of forming a thin-film magnetic recording medium in which plasma is used to modify the surface of a carbonaceous film protective

layer where the process gas may include argon, oxygen and nitrogen. Therefore, the Examiner contends that it would have been obvious to one of ordinary skill in the art to use Ueda's process gas in order to affect the etch rate as suggested by Chu.

Regarding claims 14 and 15, the Examiner states that Chu teaches reactive ion etching or sputtering in the same vacuum apparatus to deposit the laminate and the protective layer. Regarding claim 18, the Examiner states that Chu in view of Ueda teaches the method of the invention as substantially claimed, but does not show a mixture of Ar, O₂, and N₂ with a ratio of 6:1:3. The Examiner contends, however, that it would have been obvious at the time of the invention to optimize the ratio of known etch gasses in order to control etch rate and material selectivity as taught by Chu.

Applicants respectfully traverse the Examiner's rejection and submit that one of ordinary skill in the art would not be motivated to combine the teachings of Chu and Ueda to use the claimed process gas in plasma etching of the protective layer. Applicants further submit that even if the motivation to combine does exist, the combination of Chu with Ueda does not result in the present claimed invention.

Ueda requires a nitrogen-containing organic compound to form part of the glow discharge plasma mixture. Ueda teaches, through comparative examples, that the nitrogen-containing organic compound is necessary for the formation of a modified layer by plasma polymerization. Ueda teaches improved properties generated by the improved adhesion between the protective layer and the lubricant layer upon the formation of the modified layer. Ueda does not teach the use of a plasma mixture without the presence of the nitrogen-containing organic compound. Ueda does not utilize the plasma gas mixture for plasma etching as claimed in the present invention and does not teach that nitrogen, oxygen and an inert gas affect the etch rate.

Furthermore, Chu teaches creating a textured surface by first creating an etching mask, then subsequently performing the etching steps, thereby creating a textured surface on the protective layer. *See*, Chu, col. 6, lines 41-45. Chu teaches the proper choice of the process gas relates to achieving a comparable etching rate between the masking layer and the protective layer to create the textured layer. Chu does not teach the use of nitrogen in the process gas, nor does Chu teach the use of a process gas in order to affect the etch rate of the protective layer alone.

Therefore, one of ordinary skill in the art would not be motivated to combine the teachings of Chu and Ueda to use the process gas as claimed in the present invention in plasma etching the protective layer.

If there is motivation to combine, which Applicants submit that there is not, the combination of Chu and Ueda does not yield the presently claimed invention. The combination of Ueda and Chu yields a plasma gas mixture including a nitrogen-containing organic compound. The present invention does not include a plasma gas with a nitrogen-containing organic compound. Claim 13 has been amended to clarify that the process of the presently claimed invention does not contain a nitrogen-containing organic compound. Therefore, for the combination to render the presently claimed invention obvious would require a modification of the teachings of the prior art. According to the invention of Ueda, the nitrogen-containing organic compound is essential to the plasma mixture. To modify the teaching of Ueda to yield a plasma gas mixture without a nitrogen-containing organic compound would render Ueda unsatisfactory for its intended purpose. Applicants respectfully submit that this is impermissible and cannot establish *prima facie* obviousness. *See* MPEP § 2143.02.

Furthermore, regarding to claim 18, Applicants traverse the Examiner's rejection and submit that the particular ratio of the gases is not a result-effective variable. The Examiner admits that

neither Chu nor Ueda teaches the presently claimed ratio of gases and contends that it would have been obvious to optimize the ratio of the gases. A particular parameter must first be recognized as a result-effective variable before the determination of the optimum or workable ranges can be characterized as routine experimentation. *See*, MPEP § 2144.05. The prior art fails to recognize that the etching depth, and thus the removal of foreign particles from the protective layer, is a function of the ratio of the claimed gases. The prior art does not teach or suggest the importance of optimizing the proportions of the gas to achieve the result of the presently claimed invention. Chu merely discloses that the proper choice of gases and proportions thereof produce an etching selectivity of close to one between the masking layer and the carbon layer. Thus, Chu teaches that the correct proportion of the gases achieves the result of creating a textured surface. As this is not the result of the present invention, one of ordinary skill in the art would not recognize the ratio of the gases as achieving the result of the presently claimed invention.

Applicants respectfully submit that amended claim 13 is allowable over Chu and Ueda for the reasons above. Additionally, the Applicants respectfully traverse the rejection of claims 14, 15 and 18 by stating that these claim define over the prior art based on their own recital and their dependency from the independent claim. Therefore, Applicants respectfully request the Examiner withdraw the rejection.

III Allowable Subject Matter

The Examiner objected to claims 16 and 17 as dependent upon a rejected base claim. However, the Examiner indicated that the subject matter of claims 16 and 17 would be allowable if rewritten in independent form to include all of the limitations of the base claims and any intervening claims.

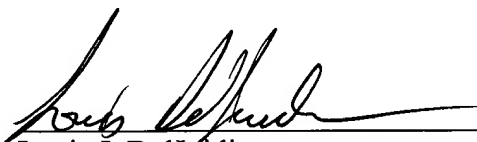
Applicants would like to thank the Examiner for the acknowledgment of the allowable subject matter of claims 16 and 17. However, Applicants respectfully traverse the objection by the Examiner and submit that the arguments presented above and the present amendment render unnecessary the need to rewrite claims 16 and 17 in independent form. Accordingly, Applicants request the Examiner withdraw the objection to claims 16 and 17.

CONCLUSION

In view of the foregoing, it is believed that claims 13-18 are in condition for allowance and is respectfully requested that the application be reconsidered and that all pending claims be allowed.

If there are any other issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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